

IEC  
**EMC**  
TEST REPORT

ISSUED BY  
Shenzhen BALUN Technology Co., Ltd.



FOR

Solar Grid-tied Inverter

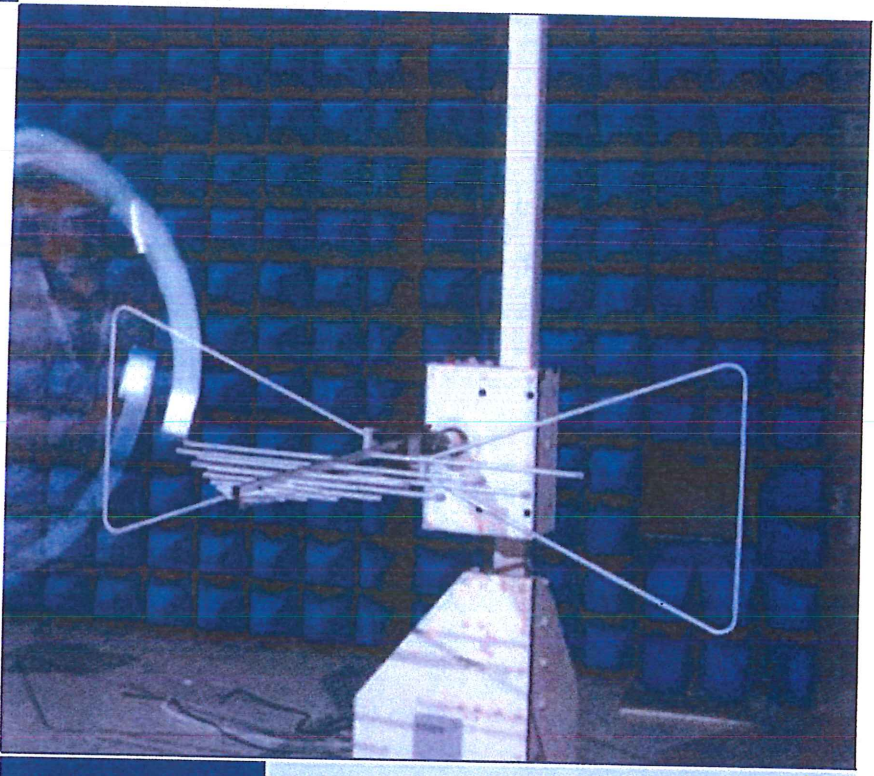


ISSUED TO  
EVOLVE ENERGY GROUP CO., LIMITED

中国认可  
国际互认  
检测

TESTING  
CNAS L6791

RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG  
WAN, HK



Tested by: Yongqing Chen  
Yongqing Chen  
(Engineer)

Date Dec. 26, 2020

Approved by: Simon Qi  
Simon Qi  
(Technical Director)

Date Dec. 26, 2020



Report No.: BL-DG20B0833-402  
EUT Name: Solar Grid-tied Inverter  
Model Name: E-136KTL-HV (Refer to 2.4)  
Brand Name:



Test Standard: IEC 61000-6-2:2016  
IEC 61000-6-4:2018  
Test conclusion: Pass  
Test Date: Jul. 03, 2020 ~ Aug. 20, 2020  
Date of Issue: Dec. 25, 2020

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**Revision History**

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Dec. 25, 2020</u>	<u>Initial Issue</u>

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# 1 GENERAL INFORMATION

## 1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Room 104, 204, 205, Building 1, No. 6, Industrial South Road, Songshan Lake District, Dongguan, Guangdong Province, P. R. China 523808
Phone Number	+86 755 6685 0100

## 1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Room 104, 204, 205, Building 1, No. 6, Industrial South Road, Songshan Lake District, Dongguan, Guangdong Province, P. R. China 523808
Accreditation Certificate	The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Room 104, 204, 205, Building 1, No. 6, Industrial South Road, Songshan Lake District, Dongguan, Guangdong Province, P. R. China 523808

## 1.3 Laboratory Condition

Ambient Temperature	20°C to 25°C
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

## 1.4 Announce

- (1) The test report reference to the report template version v1.1.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

## 2 PRODUCT INFORMATION

### 2.1 Applicant Information

Applicant	EVOLVE ENERGY GROUP CO., LIMITED
Address	RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG WAN, HK

### 2.2 Manufacturer Information

Manufacturer	EVOLVE ENERGY GROUP CO., LIMITED
Address	RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG WAN, HK

### 2.3 Factory Information

Factory	Dongguan SOFAR SOLAR Co., Ltd.
Address	1F - 6F, Building E, No. 1 JinQi Road, Bihu Industrial Park, Wulian Village, Fenggang Town, Dongguan City.

### 2.4 General Description for Equipment under Test (EUT)

EUT Name	Solar Grid-tied Inverter
Mode Name Under Test	E-136KTL-HV
Series Model Name	E-75KTL, E-80KTL, E-100KTL, E-100KTL-HV, E-110KTL, E-125KTL-HV, E-136KTL-HV
Description of Model name differentiation	The variants models have the same appearance, topology, PCB board. The specifications of Boost inductors, inverter inductors and power devices will be differentiated according to different power levels. The output power is different and controlled by software. The control software is the same for each model. Please refer to the parameter table and labels for specific differences.
Hardware Version	N/A
Software Version	ARM:V020010, DSPS:V020010, DSPM:V020010

Parameter table:

Model	E-75KTL	E-80KTL	E-100KTL	E-110KTL	E-100KTL-HV	E-125KTL-HV	E-136KTL-HV	
DC Input								
Max. DC voltage	1100V							
Rated input voltage	625V			725V		785V		
Start-up operating voltage	200V							
MPPT voltage range	180V~1000V							
Full power MPPT voltage range	500V-850V			550V-850V				
Max. input current	8*26A		10*26A					
Max. input short circuit current	8*40A		10*40A					
AC Output								
Rated power	75kW	80kW	100kW	110kW	100kW	125kW	136kW	
Max. AC power	75kVA	88kVA	110kVA	121kVA	110kVA	137kVA	150kVA	
Max. output current	113A	128A	160A	175A	128A	160A	160A	
Nominal grid voltage	3/N/PE, 380V/400Vac			3/PE, 500Vac		3/PE, 540Vac		
Nominal output frequency	50Hz/60Hz							
Output power factor	1 default (adjustable +/-0.8)							
Operating temperature range	-30°C ~60°C							
Ingress protection	IP66							
Protective class	Class I							
Main difference								
The Number of inductances BOOST	8		10			12		
The Number of modules BOOST	4		5			6		

Labels:

## EVVO Solar Grid-tied Inverter

Model No:	E-75KTL
Max.DC Input Voltage	1100V
Operating MPPT Voltage Range	180~1000V
Max. Input Current	8*26A
Max. PV Isc	8*40A
Rated Grid Voltage	3/N/PE,380/400Vac
Max.Output Current	113A
Rated Grid Frequency	50/60Hz
Rated Output Power	75KW
Max.Output Power	75KVA
Power Factor	1(adjustable+/-0.8)
Ingress Protection	IP66
Operating Temperature Range	-30°C~+60°C
Protective Class	Class I
Overvoltage Category	AC III,DC II
Made in China	

Manufacturer : EVOLVE ENERGY GROUP CO., LIMITED  
 Address :RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG WAN, HK  
 Global Head Quarters 371 Sidco Industrial Estate Chennai 600098 India  
 VDE0126-1-1,VDE-AR-N4105,G99,IEC61727 IEC62116,AS4777

## EVVO Solar Grid-tied Inverter

Model No:	E-80KTL
Max.DC Input Voltage	1100V
Operating MPPT Voltage Range	180~1000V
Max. Input Current	8*26A
Max. PV Isc	8*40A
Rated Grid Voltage	3/N/PE,380/400Vac
Max.Output Current	128A
Rated Grid Frequency	50/60Hz
Rated Output Power	80KW
Max.Output Power	88KVA
Power Factor	1(adjustable+/-0.8)
Ingress Protection	IP66
Operating Temperature Range	-30°C~+60°C
Protective Class	Class I
Overvoltage Category	AC III,DC II
Factory - Shenzhen China	

Manufacturer : EVOLVE ENERGY GROUP CO., LIMITED  
 Address :RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG WAN, HK  
 Global Head Quarters 371 Sidco Industrial Estate Chennai 600098 India  
 VDE0126-1-1,VDE-AR-N4105,G99,IEC61727 IEC62116,AS4777

## EVVO Solar Grid-tied Inverter

Model No:	E-100KTL
Max.DC Input Voltage	1100V
Operating MPPT Voltage Range	180~1000V
Max. Input Current	10*26A
Max. PV Isc	10*40A
Rated Grid Voltage	3/N/PE,380/400Vac
Max.Output Current	160A
Rated Grid Frequency	50/60Hz
Rated Output Power	100KW
Max.Output Power	110KVA
Power Factor	1(adjustable+/-0.8)
Ingress Protection	IP66
Operating Temperature Range	-30°C~+60°C
Protective Class	Class I
Overvoltage Category	AC III,DC II
Factory - Shenzhen China	

Manufacturer : EVOLVE ENERGY GROUP CO., LIMITED  
 Address :RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG WAN, HK  
 Global Head Quarters 371 Sidco Industrial Estate Chennai 600098 India  
 VDE0126-1-1,VDE-AR-N4105,G99,IEC61727 IEC62116,AS4777

## EVVO Solar Grid-tied Inverter

Model No:	E-100KTL-HV
Max.DC Input Voltage	1100V
Operating MPPT Voltage Range	180~1000V
Max. Input Current	10*26A
Max. PV Isc	10*40A
Rated Grid Voltage	3/PE,500Vac
Max.Output Current	128A
Rated Grid Frequency	50/60Hz
Rated Output Power	100KW
Max.Output Power	110KVA
Power Factor	1(adjustable+/-0.8)
Ingress Protection	IP66
Operating Temperature Range	-30°C~+60°C
Protective Class	Class I
Overvoltage Category	AC III,DC II
Made in China	

Manufacturer : EVOLVE ENERGY GROUP CO., LIMITED  
 Address :RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST SHEUNG WAN, HK  
 Global Head Quarters 371 Sidco Industrial Estate Chennai 600098 India  
 VDE0126-1-1,VDE-AR-N4105,G99,IEC61727 IEC62116,AS4777

# EVVO

Solar Grid-tied Inverter

Model No:	E-110KTL
Max.DC Input Voltage	1100V
Operating MPPT Voltage Range	180~1000V
Max. Input Current	10*26A
Max. PV Isc	10*40A
Rated Grid Voltage	3/N/PE,380/400Vac
Max.Output Current	175A
Rated Grid Frequency	50/60Hz
Rated Output Power	110KW
Max.Output Power	121KVA
Power Factor	1(adjustable+/-0.8)
Ingress Protection	IP66
Operating Temperature Range	-30°C~+60°C
Protective Class	Class I
Overvoltage Category	AC III,DC II
Made in China	

Manufacturer : EVOLVE ENERGY GROUP CO., LIMITED  
 Address :RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST  
 SHEUNG WAN, HK  
 Global Head Quarters 371 Sidco Industrial Estate  
 Chennai 600098 India

VDE0126-1-1,VDE-AR-N4105,G99,IEC61727  
 IEC62116,AS4777



# EVVO

Solar Grid-tied Inverter

Model No:	E-125KTL-HV
Max.DC Input Voltage	1100V
Operating MPPT Voltage Range	180~1000V
Max. Input Current	10*26A
Max. PV Isc	10*40A
Rated Grid Voltage	3/PE,500Vac
Max.Output Current	160A
Rated Grid Frequency	50/60Hz
Rated Output Power	125KW
Max.Output Power	137KVA
Power Factor	1(adjustable+/-0.8)
Ingress Protection	IP66
Operating Temperature Range	-30°C~+60°C
Protective Class	Class I
Overvoltage Category	AC III,DC II
Made in China	

Manufacturer : EVOLVE ENERGY GROUP CO., LIMITED  
 Address :RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST  
 SHEUNG WAN, HK  
 Global Head Quarters 371 Sidco Industrial Estate  
 Chennai 600098 India

VDE0126-1-1,VDE-AR-N4105,G99,IEC61727  
 IEC62116,AS4777



# EVVO

Solar Grid-tied Inverter

Model No:	E-136KTL-HV
Max.DC Input Voltage	1100V
Operating MPPT Voltage Range	180~1000V
Max. Input Current	10*26A
Max. PV Isc	10*40A
Rated Grid Voltage	3/PE,540Vac
Max.Output Current	160A
Rated Grid Frequency	50/60Hz
Rated Output Power	136KW
Max.Output Power	150KVA
Power Factor	1(adjustable+/-0.8)
Ingress Protection	IP66
Operating Temperature Range	-30°C~+60°C
Protective Class	Class I
Overvoltage Category	AC III,DC II
Made in China	

Manufacturer : EVOLVE ENERGY GROUP CO., LIMITED  
 Address :RM 702, 7/F FU FAI COMM CTR 27 HILLIER ST  
 SHEUNG WAN, HK  
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VDE0126-1-1,VDE-AR-N4105,G99,IEC61727  
 IEC62116,AS4777





## 2.5 Ancillary Equipment

Note: not applicable.

## 2.6 Technical Information

Interfaces present on the EUT	AC Ports	From mains to AC port.
	DC Ports	From power supply to EUT.
	Telecom Port	No Telecom Ports.
	Signal Ports	RS-485, which cable length does not exceed 3m.
About the Product	The equipment is Solar Grid-tied Inverter, the above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.	

### 3 SUMMARY OF TEST RESULTS

#### 3.1 Test Standards

The objective of the report is to perform testing according to following standards:

Identity	Document Title
IEC 61000-6-2:2016	Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity standard for industrial environments
IEC 61000-6-4:2018	Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments

### 3.2 Verdict

No.	Base Standard	Description	Test Verdict	Result	Remark
<b>Emission</b>					
1	IEC 61000-6-4	Radiated Emission	Below 1 GHz	P	Annex A.1 Note 1
2	IEC 61000-6-4	Conducted Emission	AC Ports	P	Annex A.2 --
			Telecom Ports	N	
<b>Immunity</b>					
3	IEC 61000-4-2	Electrostatic Discharge Immunity		P	Annex A.3 --
4	IEC 61000-4-3	Radiated RF Electromagnetic Field Immunity		P	Annex A.4 --
5	IEC 61000-4-4	Electrical Fast Transient/Burst Immunity	AC Ports	P	Annex A.5 -- -- Note 3
			DC Ports	P	
			Signal Ports	N	
6	IEC 61000-4-5	Surge Immunity	AC Ports	P	Annex A.6 -- -- Note 4
			DC Ports	P	
			Signal Ports	N	
7	IEC 61000-4-6	Immunity to Conducted Disturbances Induced by RF Fields	AC Ports	P	Annex A.7 -- -- Note 3
			DC Ports	P	
			Signal Ports	N	
8	IEC 61000-4-8	Power-frequency magnetic field		P	Annex A.8 --
9	IEC 61000-4-34	Voltage Dips and Short Interruptions Immunity	AC Ports	P	Annex A.9 --

Note 1: If the internal emission source(s) is operating at a frequency below 9 kHz then measurements need only to be performed up to 230 MHz.

Note 2: Telecommunications/network port is a point of connection for voice, data and signaling transfers intended to interconnect widely dispersed systems via such means as direct connection to multi-user telecommunications networks, local area networks and similar networks. A port generally intended for interconnection of components of an ITE system under test and used in accordance with its functional specifications, is not considered to be a telecommunication port. The EUT does not have telecommunication port according to above definition.

Note 3: Signal/control port is a port at which a conductor or cable intended to carry signals is connected to the equipment. Applicable only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 3 m. The signal ports cable length of EUT is less than 2m.

Note 4: Signal/control port is a port at which a conductor or cable intended to carry signals is connected to the equipment. Applicable only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 30 m. The signal ports cable length of EUT is less than 2m.

Note 5: The differences between this report and the report No. BL-DG2070052-402(G2), which was issued by Shenzhen BALUN Technology Co., Ltd. on Dec. 09, 2020 is that :

a: Change the applicant information, manufacturer information and series model.

b: Update the labels, EUT external photos and EUT internal photos.

The sample under test is the same. All the test result data please refer to report No. BL-DG2070052-402(G2),

which was issued by Shenzhen BALUN Technology Co., Ltd. on Dec. 09, 2020.

This report judges the test conclusions:

- |                                       |   |
|---------------------------------------|---|
| —Not applicable for this test product | N |
| —Meet requirements                    | P |
| —Does not meet the requirements       | F |



### 3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Measurement	Value
Conducted emissions (Mains port)	3.77 dB
Conducted emissions (Telecom port)	4.54 dB
Radiated emissions (30 MHz-1 GHz)	4.81 dB
Radiated emissions (1 GHz-18 GHz)	5.41 dB

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Environments

Environment Parameter	Selected Values During Tests			
	Temperature	Voltage	Relative Humidity	Ambient Pressure
Normal Temperature, Normal Voltage (NTNV)	23°C ~ 25°C	AC 540V DC 180V~1000V	50% ~ 55%	100kPa ~ 102kPa

### 4.2 Test Equipment List

Radiated Emission Test For Frequency Below 1 GHz					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Keysight	N9038A	MY55330115	2020.03.16	2021.03.15
Test Antenna- Bi-Log	SCHWARZBECK	VULB 9163	9163-1202	2018.12.20	2021.12.19
Anechoic Chamber	YIHENG ELECTRONIC	12.0m*7.0m* 7.5m	N/A	2019.03.05	2022.03.04

Conducted Emission					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Keysight	N9038A	MY55330115	2020.03.16	2021.03.15
LISN	SCHWARZBECK	NNLK 8129	8129-462	2020.03.16	2021.03.15
Anechoic Chamber	YIHENG ELECTRONIC	12.0m*7.0m* 7.5m	N/A	2019.03.05	2022.03.04

Electrostatic Discharge Immunity Test					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
ESD Test System	SCHLODER	SESD 30000	607339	2020.03.16	2021.03.15

Radiated RF Electromagnetic Field Immunity Test					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Anechoic Chamber	YIHENG ELECTRONIC	12.0m*7.0m* 7.5m	N/A	2019.03.05	2022.03.04
Signal Generator	ROHDE&SCHWA RZ	N5181A	MY50141978	2020.03.16	2021.03.15
Power Amplifier	rflight	NTWPA-0081 0200E	18093198	2020.03.16	2021.03.15
Power Amplifier	rflight	NTWPA-1060 100E	18093195	2020.03.16	2021.03.15
Power Meter	Agilent	E4417A	GB41292042	2020.02.08	2021.02.07
Feld Strength Meter	Narda	EP601	511WX51129	2020.03.16	2021.03.15
Test Antenna- Bi-Log	SCHWARZBECK	VULB 9163	9163-1202	2018.12.20	2021.12.19
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	9120D-1986	2018.12.20	2021.12.19

Electrical Fast Transient/Burst Immunity Test					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EFT Test System	HTEC	HEFT 51	1331011	2020.03.16	2021.03.15
EFT coupling network	HTEC	ECDN 51	150601	2020.03.16	2021.03.15

Transients and Surges Test					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SURGE Generator (AC/DC Ports)	HTEC	HCWG 70	151601	2020.03.16	2021.03.15
SURGE coupling network (AC/DC Ports)	HTEC	SCDN303P7	151602	2020.03.16	2021.03.15

Immunity to Conducted Disturbances Induced by RF Fields					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Conducted Disturbances Test System	Schloder GmbH	CDG 6000	18901932-01 01	2020.03.16	2021.03.15
CDN-M5	Schloder GmbH	CDN-M5	A2560005	2020.03.16	2021.03.15

Voltage Dips and Short Interruptions Immunity Test					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Voltage Fault Simulating Generator	HTEC	HPFS303P	152301	2020.03.16	2021.03.15
Voltage Fault Coupling Network	HTEC	HV3P30	152302	2020.03.16	2021.03.15

Power Frequency Magnetic Fields Immunity					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Magnetic Field Tester	HEAFELY	HPFMF 1000	183102	2020.03.16	2021.03.15

### 4.3 Test Enclosure list

Name	Manufacturer	Model	Serial No.	Length	Description
DC Source	WKDY	WLPA-150KW	W20180626011	N/A	N/A
AC Source	WKDY	WLPA-33075KVA	N/A	N/A	N/A

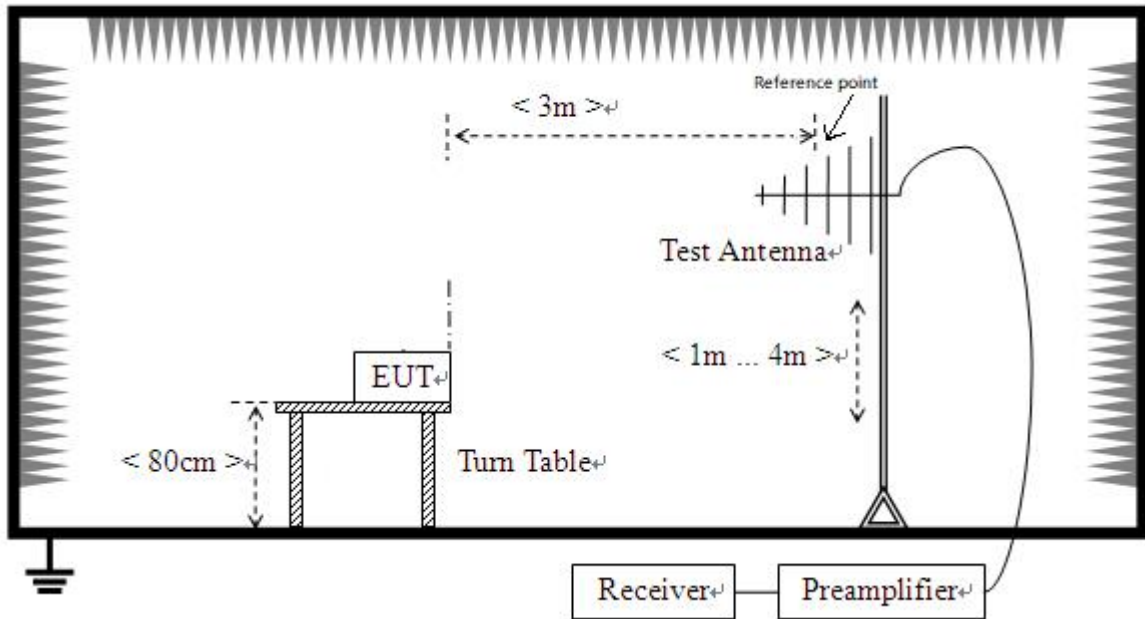
### 4.4 Test Configurations

Test Configurations (TC) No.	Description
TC01	<u>The Grid-connected Test mode (Full Load)</u> <u>EUT+ DC Source+AC Grid</u>
TC02	<u>The Grid-connected Test mode (10% Load)</u> <u>EUT+ DC Source+AC Grid</u>
TC03	<u>The Standby Test mode</u> <u>EUT+AC Grid</u>

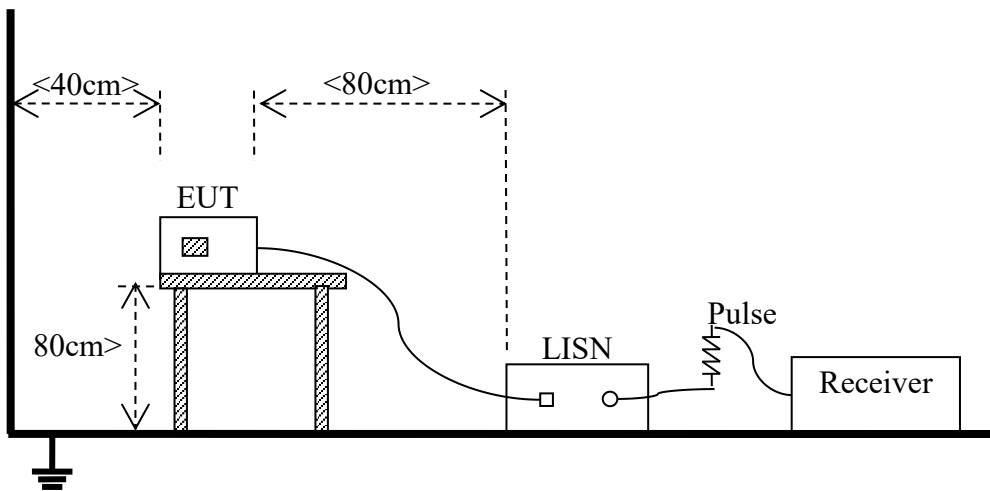


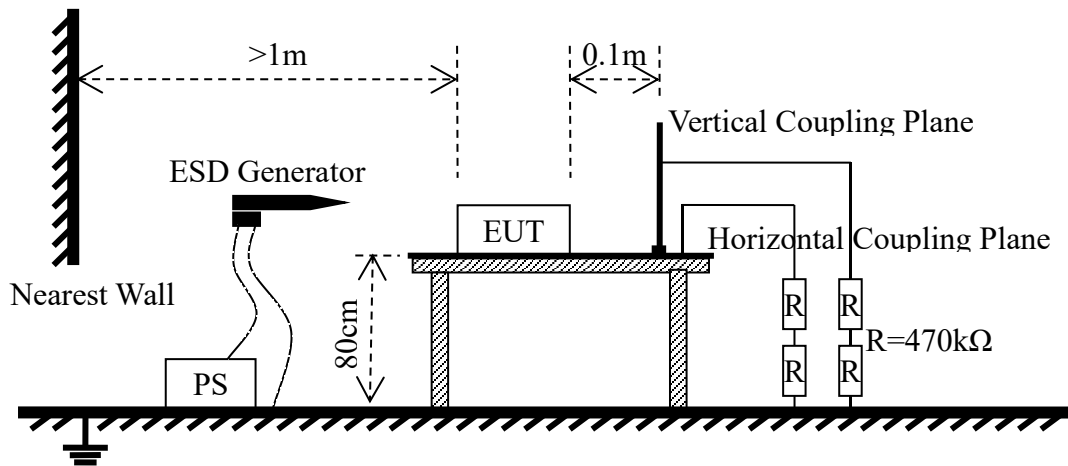
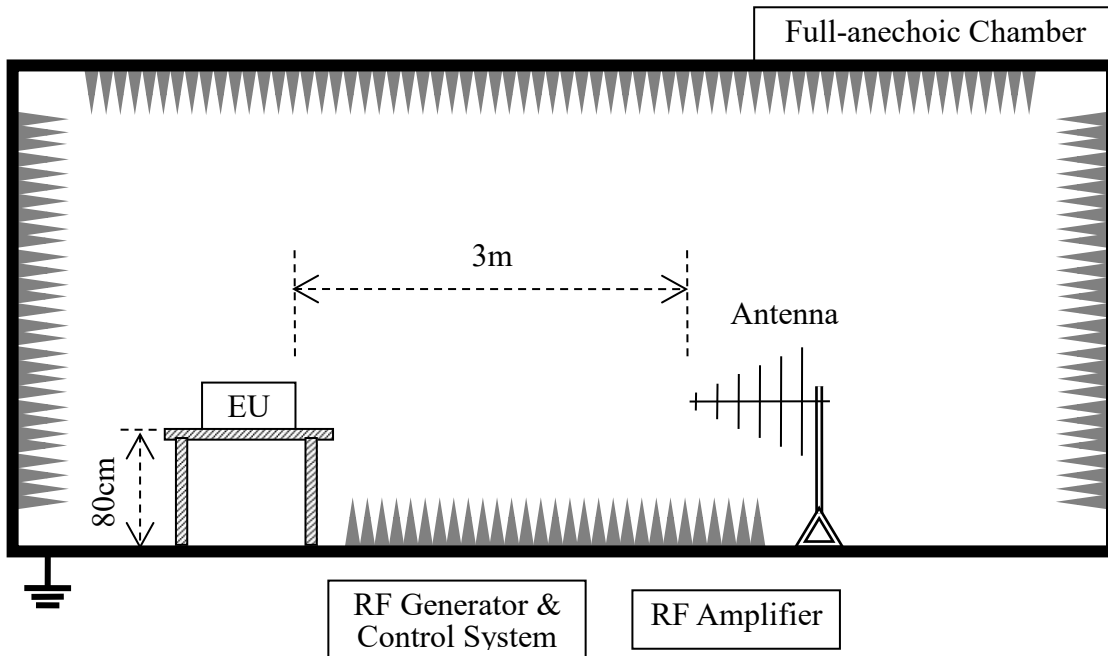
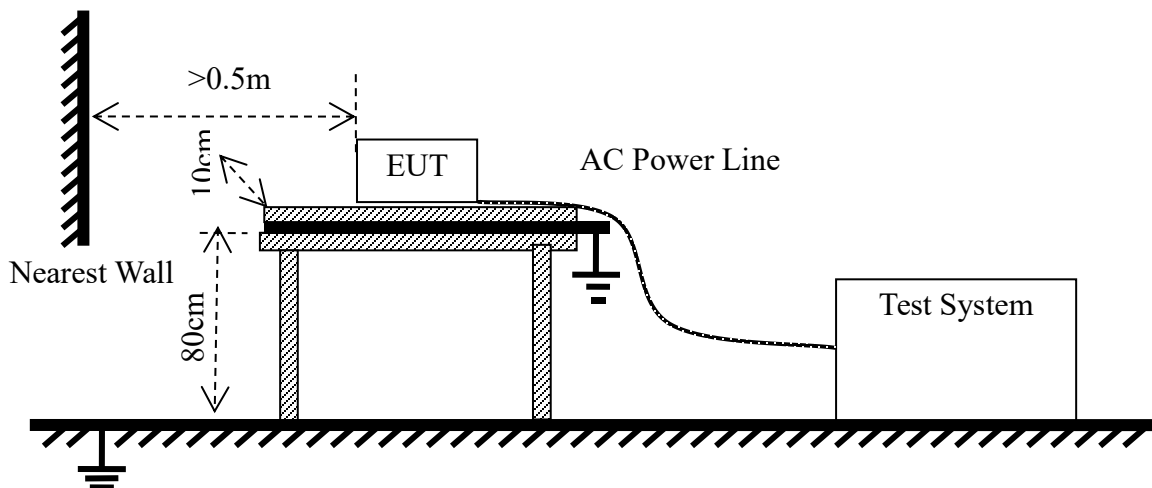
## 4.5 Description of Test Setup

### Test Setup 1 For Radiated Emission Test (30 MHz-1 GHz)

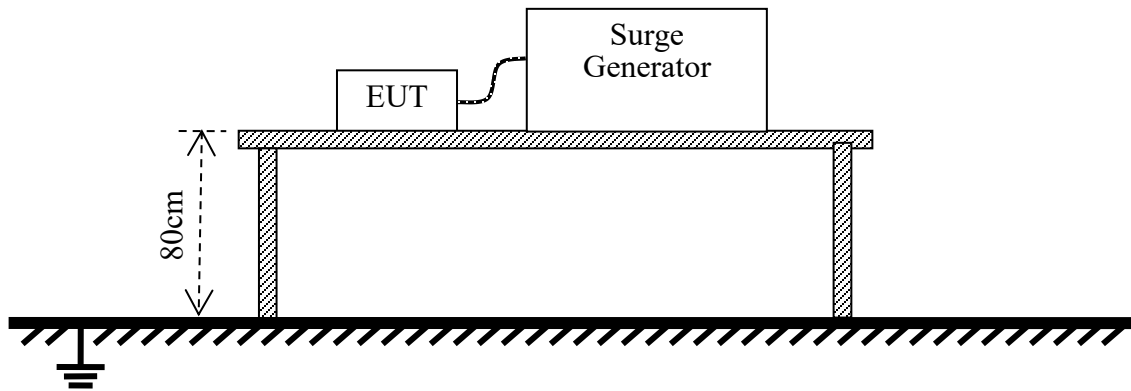


### Test Setup 2 For Conducted disturbance voltage Test

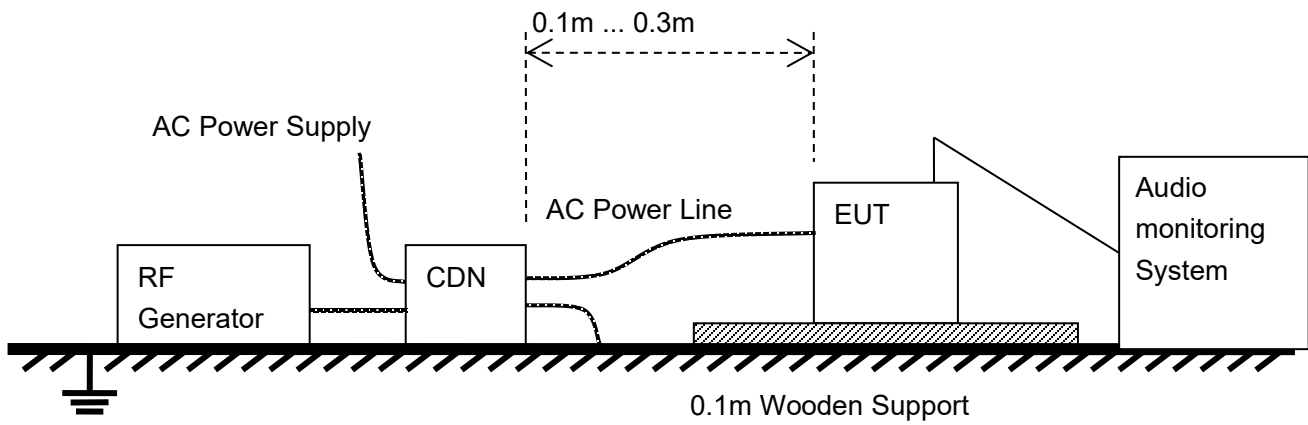


Test Setup 3 For Electrostatic Discharge Immunity Test

Test Setup 4 For Radiated Immunity Test

Test Setup 5 For Electrical Fast Transient / Burst Immunity Test


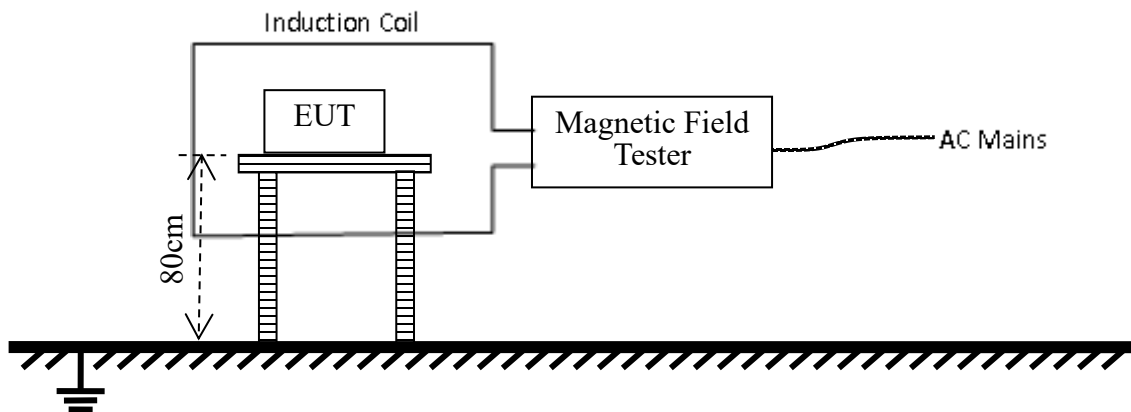
Test Setup 6 For Surge Immunity Test



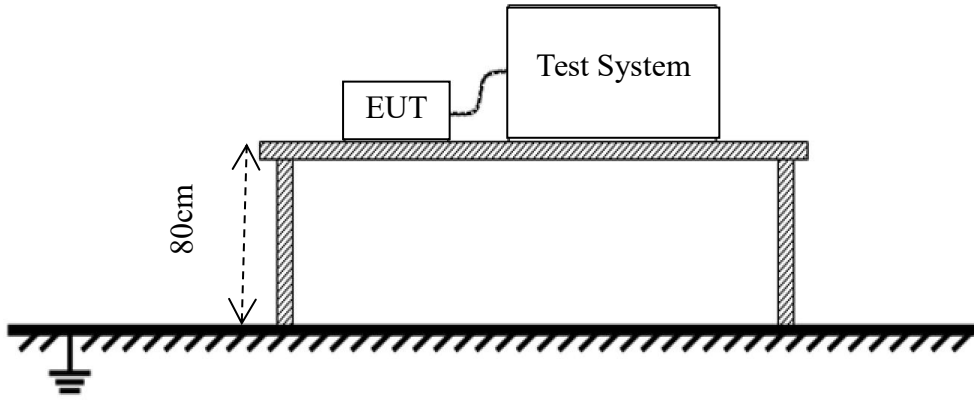
Test Setup 7 For Immunity to Conducted Disturbances Induced By RF Fields Test



Test Setup 8 Power Frequency Magnetic Fields



Test Setup 9 For Voltage Dips and Short Interruptions Immunity Test





### 4.6 Test Conditions

Test Case	Test Conditions	
Radiated Emission	Test Env.	NTNV
	Test Setup	Test Setup 1
	Test Configuration	TC01, TC03
Conducted Emission	Test Env.	NTNV
	Test Setup	Test Setup 2
	Test Configuration	TC01,TC03
Electrostatic Discharge Immunity	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC02
Radiated RF Electromagnetic Field Immunity	Test Env.	NTNV
	Test Setup	Test Setup 4
	Test Configuration	TC02
Electrical Fast Transient/Burst Immunity	Test Env.	NTNV
	Test Setup	Test Setup 5
	Test Configuration	TC02
Surge Immunity	Test Env.	NTNV
	Test Setup	Test Setup 6
	Test Configuration	TC02
Immunity to Conducted Disturbances Induced by RF Fields	Test Env.	NTNV
	Test Setup	Test Setup 7
	Test Configuration	TC02
Power-frequency magnetic field	Test Env.	NTNV
	Test Setup	Test Setup 8
	Test Configuration	TC02
Voltage Dips and Short Interruptions Immunity	Test Env.	NTNV
	Test Setup	Test Setup 9
	Test Configuration	TC02

Note: Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report. The Grid-connected Test mode (Full Load) is the worst test mode in this report.

## 5 TEST ITEMS

### 5.1 Emission Tests

#### 5.1.1 Radiated Emission

##### 5.1.1.1 Limit

Frequency range (MHz)	Distance (at 3 m)	Distance (at 10 m)	Distance (at 30 m)
	Quasi-Peak Limit (dB $\mu$ V/m)	Quasi-Peak Limit (dB $\mu$ V/m)	Quasi-Peak Limit (dB $\mu$ V/m)
30 - 230	50	40	30
230 - 1000	57	47	37

NOTE:

- 1) At transitional frequencies the lower limit applies.
- 2) If the internal emission source(s) is operating at a frequency below 9 kHz then measurements need only to be performed up to 230 MHz.

##### 5.1.1.2 Test Procedure

All Radiated Emission tests were performed in the azimuth plane. And test data and plots are recorded in this test report.

An initial pre-scan was performed in the chamber using the EMI Receiver in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bi-Log antenna with 2 orthogonal polarities.

## 5.1.2 Conducted Emission

### 5.1.2.1 Test Limit

#### AC Port

Frequency range (MHz)	Class B	
	Quasi-peak (dBuV)	Average (dBuV)
0.15 - 0.50	79	66
0.50 - 30	73	60

NOTE:

- 1) At transitional frequencies the lower limit applies.

#### Telecom Port

Frequency (MHz)	Class B	
	Quasi-peak (dBuV)	Average (dBuV)
0.15 - 0.50	97-87	84-74
0.50 - 30	87	74

NOTE:

- 1) At transitional frequencies the lower limit applies.
- 2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.
- 3) The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of  $150 \Omega$  to the telecommunication port under test (conversion factor is  $20 \log_{10} 150 / I = 44 \text{ dB}$ ).

### 5.1.2.2 Test Procedure

The EUT is connected to the power mains through a LISN which provides  $50 \Omega/50 \mu\text{H}$  of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Telecommunication port was checked to find out the maximum conducted emission

## 5.2 Immunity Tests

### 5.2.1 Test Performance Criteria for Immunity Test

#### 5.2.1.1 General Performance Criteria

Type	Description
Criterion A	The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
Criterion B	The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
Criterion C	Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

## 5.2.2 Electrostatic Discharge Immunity

### 5.2.2.1 Test Specification

Specification	Value
Basic Standard	IEC 61000-4-2
Discharge Impedance	330 Ohm / 150 pF
Discharge Voltage	Air Discharge: 2 kV; 4 kV; 8 kV; Contact Discharge: 2 kV; 4 kV
Polarity	Positive / Negative
Number of Discharge	Minimum 20 times at each test point
Discharge Mode	Single discharge
Discharge Period	1 second minimum

### 5.2.2.2 Test Procedure

1. Electrostatic discharges are applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
2. The test is performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
3. The time interval between two successive single discharges is at least 1 second.
4. The ESD generator is held perpendicularly to the surface to which the discharge is applied and the return cable is at least 0.2 meters from the EUT.
5. Contact discharges are applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
6. Air discharges are applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator is removed from the EUT and re-triggered for a new single discharge. The test is repeated until all discharges were completed.
7. At least ten single discharges (in the most sensitive polarity) are applied to the Horizontal Coupling Plane at points on each side of the EUT. The ESD generator is positioned vertically at a distance of 0.1 meters from the EUT with the discharge electrode touching the HCP.
8. At least ten single discharges (in the most sensitive polarity) are applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5 m\*0.5 m) is placed vertically to and 0.1 meters from the EUT.

## 5.2.3 Radio Frequency Electromagnetic Field Immunity

### 5.2.3.1 Test Specification

Specification	Value	
Basic Standard	IEC 61000-4-3	
Frequency Range	80 MHz to 1000 MHz	1.4 GHz to 6.0 GHz
Field Strength	10 V/m (unmodulated, r.m.s)	3 V/m (unmodulated, r.m.s)
Modulation	1 kHz sine wave, 80%, AM modulation	
Frequency Step	1% of fundamental	
Polarity of Antenna	Horizontal and Vertical	
Test Distance	3 m	
Antenna Height	1.5 m	
Dwell Time	3 seconds	

NOTE:

- 1) Except for the ITU broadcast frequency bands 87 MHz to 108 MHz, 174 MHz to 230 MHz, and 470 MHz to 790 MHz, where the level shall be 3 V/m.
- 2) The frequency range has been selected to cover the frequencies with the highest potential risk of a disturbance.

### 5.2.3.2 Test Procedure

1. The testing is performed in a fully anechoic chamber. The transmit antenna is located at a distance of 3 meters from the EUT.
2. The test signal is 80% amplitude modulated with a 1 kHz sine wave.
3. The frequency range is swept with the exception of the exclusion band for transmitters, receivers and duplex transceivers. The rate of sweep does not exceed  $1.5 \cdot 10^{-3}$  decade/s. Where the frequency range is swept incrementally, the step size is 1% of fundamental.
4. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
5. The field strength level is 10 V/m, 3 V/m for the corresponding frequency.
6. The test is performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides, but only the worst side data is reported in this report.

## 5.2.4 Electrical Fast Transient / Burst Immunity

### 5.2.4.1 Test Specification

Specification	Value
Basic Standard	IEC 61000-4-4
Test Voltage	AC Power Port: 2 kV, DC Power Ports: 1 kV.
	Signal Ports: 1 kV.
Polarity	Positive / Negative
Impulse Frequency	5 kHz
Impulse Wave Shape	5/50 ns
Burst Duration	15 ms
Burst Period	300 ms
Test Duration	> 1 min

NOTE:

1. The signal ports test applicable only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 3 m.
2. The DC ports test not applicable to input ports intended for connection to a battery or a rechargeable battery which must be removed or disconnected from the apparatus for recharging. Apparatus with a DC power input port intended for use with an AC–DC power adaptor shall be tested on the AC power input of the AC–DC power adaptor specified by the manufacturer or, where none is so specified, using a typical AC–DC power adaptor. The test is applicable to DC power input ports intended to be connected permanently to cables longer than 3 m.

### 5.2.4.2 Test Procedure

1. The EUT is tested with 2000 V discharges to the AC or DC power input leads, 1000 V for signal port.
2. Both positive and negative polarity discharges are applied.
3. The length of the "hot wire" from the coaxial output of the EFT generator to the terminals on the EUT should not exceed 1 m.
4. The duration time of each test sequential is 1min.
5. The transient / burst waveform is in accordance with IEC 61000-4-4, 5/50 ns.



## 5.2.5 Surge Immunity

### 5.2.5.1 Test Specification

Specification	Value		
	AC Power Port	DC Power Port	Signal Port
Basic Standard	IEC 61000-4-5		
Waveform	Voltage: 1.2/50 $\mu$ s; Current: 8/20 $\mu$ s	Voltage: 1.2/50 $\mu$ s; Current: 8/20 $\mu$ s	Voltage: 1.2/50 $\mu$ s; Current: 8/20 $\mu$ s
Test Voltage	line to ground 2 kV; line to line 1 kV	0.5 kV	1 kV
Polarity	Positive / Negative		
Phase Angle	0°, 90°, 180°, 270°	N/A	N/A
Repetition Rate	60 seconds		
Times	5 times per condition		

**NOTE:**

1. Signal Port test Applicable only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 30 m.
2. Signal Port test Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, this test is not required.
3. DC Port test Not applicable to input ports intended for connection to a battery or a rechargeable battery which must be removed or disconnected from the apparatus for recharging. Apparatus with a DC power input port intended for use with an AC–DC power adaptor shall be tested on the AC power input of the AC–DC power adaptor specified by the manufacturer or, where none is so specified, using a typical AC–DC power adaptor. DC ports, which are not intended to be connected to a DC distribution network are treated as signal ports.

### 5.2.5.2 Test Procedure

The EUT and the auxiliary equipment are placed on a table of 0.8 m heights above a metal ground reference plane. The size of ground plane is greater than 1 m\*1 m and project beyond the EUT by at least 0.1 m on all sides. The ground plane is connected to the protective earth. The length of power cord between the coupling device and the EUT is less than 2 meters (provided by the manufacturer).

The EUT is connected to the power mains through a coupling device that directly couples the surge interference signal. The surge noise is applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).

The surges are applied line to line and line(s) to earth. When testing line to earth the test voltage is applied successively between each of the lines and earth. Set up to the test level specified increased the test voltage. All lower levels including the selected test level are tested. The polarity of each surge level included positive and negative test pulses.

## 5.2.6 Immunity to Conducted Disturbances Induced by RF Fields

### 5.2.6.1 Test Specification

Specification	Value
Basic Standard	IEC 61000-4-6
Frequency Range	0.15 MHz – 80 MHz
Test Voltage	10 V <sub>rms</sub> (unmodulated, r.m.s)
Modulation	1 kHz sine wave, 80% AM
Frequency Step	1% of fundamental
Coupled Cable	AC Power Line; DC Power Line; Signal Line
Coupling Device	CDN-M5, EM Clamp

Note:

- 1) Except for the ITU broadcast frequency band 47 MHz to 68 MHz, where the level shall be 3V/m.
- 2) The test level can also be defined as the equivalent current into a 150 Ω load.
- 3) The DC port and signal port only apply to ports interfacing with cables whose total length according to the manufacturers functional specification may exceed 3 m.

### 5.2.6.2 Test Procedure

The EUT shall be tested within its intended operating and climatic conditions.

The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 150 Ohm load resistor.

The test signal is 80% amplitude modulated with a 1 kHz sine wave.

The frequency range is swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80% amplitude. The sweep rate shall not exceed  $1.5 \cdot 10^{-3}$  decades/s. The step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value where the frequency is swept incrementally.

The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequencies and harmonics or frequencies of dominant interest, shall be analyzed separately.

Attempts should be made to fully exercise the EUT during test, and to fully interrogate all exercise modes selected for susceptibility.

## 5.2.7 Power Frequency Magnetic Fields Immunity

### 5.2.7.1 Test Specification

Specification	Value
Basic Standard	IEC 61000-4-8
Field Frequency	50/60 Hz
Test Level	30 A/m
Polarity	Horizontal and Vertical
Test Duration	5 min

NOTE:

1. The test shall be carried out at the frequencies appropriate to the power supply frequency. Equipment intended for use in areas supplied only at one of these frequencies need only be tested at that frequency.
2. Applicable only to apparatus containing devices susceptible to magnetic fields.

### 5.2.7.2 Test Procedure

The EUT shall be subjected to the test magnetic field by using the induction coil of standard dimensions (1 m\*1 m) and shown in Section 15.1. The induction coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.

## 5.2.8 Voltage Dips and Short Interruptions Immunity

### 5.2.8.1 Test Specification

#### AC Ports

Specification	Value
Basic Standard	IEC 61000-4-34
Frequency	50/60Hz
Voltage Dips	100% reduction: 20 ms;60% reduction: 200/240 ms; 30% reduction: 500/600 ms
Voltage Interruptions	100% reduction: 5000/6000 ms
Voltage Phase Angle	0°

NOTE: Applicable only to AC input ports.

### 5.2.8.2 Test Procedure

The power cord is used as supplied by the manufacturer. The EUT was connected to the line output of the Voltage Dips and Interruption Generator.

The EUT is tested for a) 100% voltage dip of supplied voltage with duration of 20 ms; b) 60% voltage dip of supplied voltage with duration of 200 or 240 ms; c) 30% voltage dip of supplied voltage and duration 500 or 600 ms. Both of the dip tests are carried out for a sequence of three voltage dips with intervals of 10 seconds.

100% voltage interruption of supplied voltage with duration of 5000 or 6000 ms is followed, which is a sequence of three voltage interruptions with intervals of 10 seconds.

Voltage reductions occur at 0 degrees crossover point of the voltage waveform. The performance of the EUT is checked after the voltage dip or interruption.

# ANNEX A TEST RESULTS

## A.1 Radiated Emission

Note 1: The symbol of "--" in the table which means not applicable.

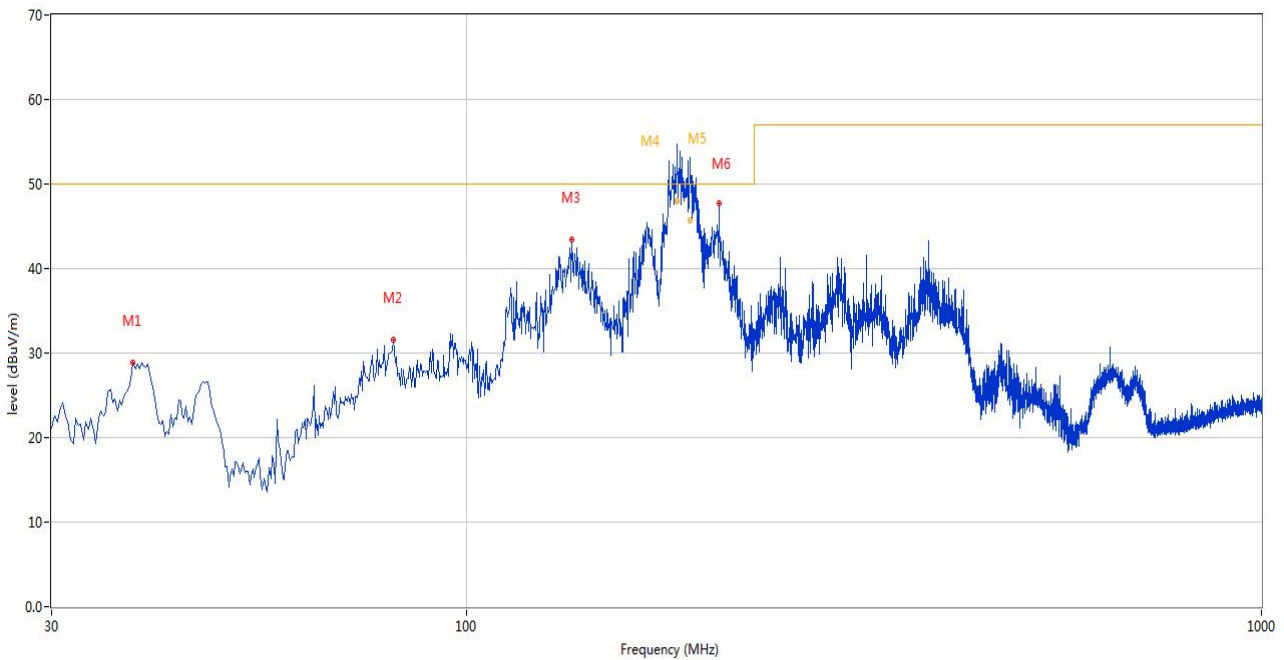
Note 2: Measurements shall be made with a quasi-peak measuring receiver in the frequency range 30 MHz to 1000 MHz. To reduce the testing time, a peak measuring receiver may be used instead of a quasi-peak measuring receiver. In case of dispute, measurement with a quasi-peak measuring receiver will take precedence.

### Test Data and Plots

The worst test mode: The Grid-connected Test mode (Full Load)

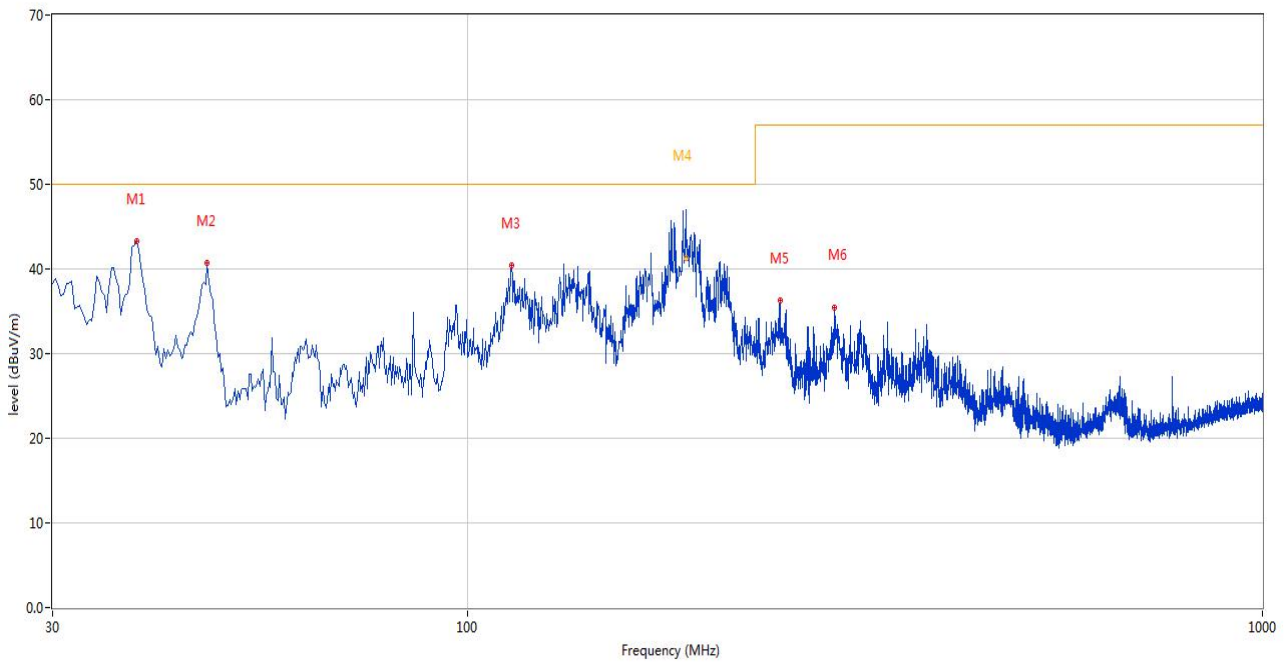
30 MHz – 1 GHz

#### Test Antenna Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	38.002	28.87	-27.61	50.0	-21.13	Peak	347.00	300	Horizontal	P
2	80.683	31.60	-31.52	50.0	-18.40	Peak	95.00	200	Horizontal	P
3	135.488	43.36	-30.97	50.0	-6.64	Peak	235.00	200	Horizontal	P
4*	183.783	48.02	-28.76	50.0	-1.98	QP	48.00	188	Horizontal	P
5*	191.110	45.74	-27.98	50.0	-4.26	QP	72.00	128	Horizontal	P
6	207.510	46.76	-27.37	50.0	-3.24	Peak	342.00	100	Horizontal	P

Test Antenna Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	38.245	43.31	-27.54	50.0	-6.69	Peak	27.00	100	Vertical	P
2	46.975	40.69	-25.94	50.0	-9.31	Peak	252.00	100	Vertical	P
3	113.420	40.42	-28.11	50.0	-9.58	Peak	238.00	100	Vertical	P
4*	188.167	41.34	-28.32	50.0	-8.66	QP	238.00	157	Vertical	P
5	247.280	36.23	-25.73	57.0	-20.77	Peak	360.00	200	Vertical	P
6	289.233	35.45	-24.72	57.0	-21.55	Peak	360.00	200	Vertical	P

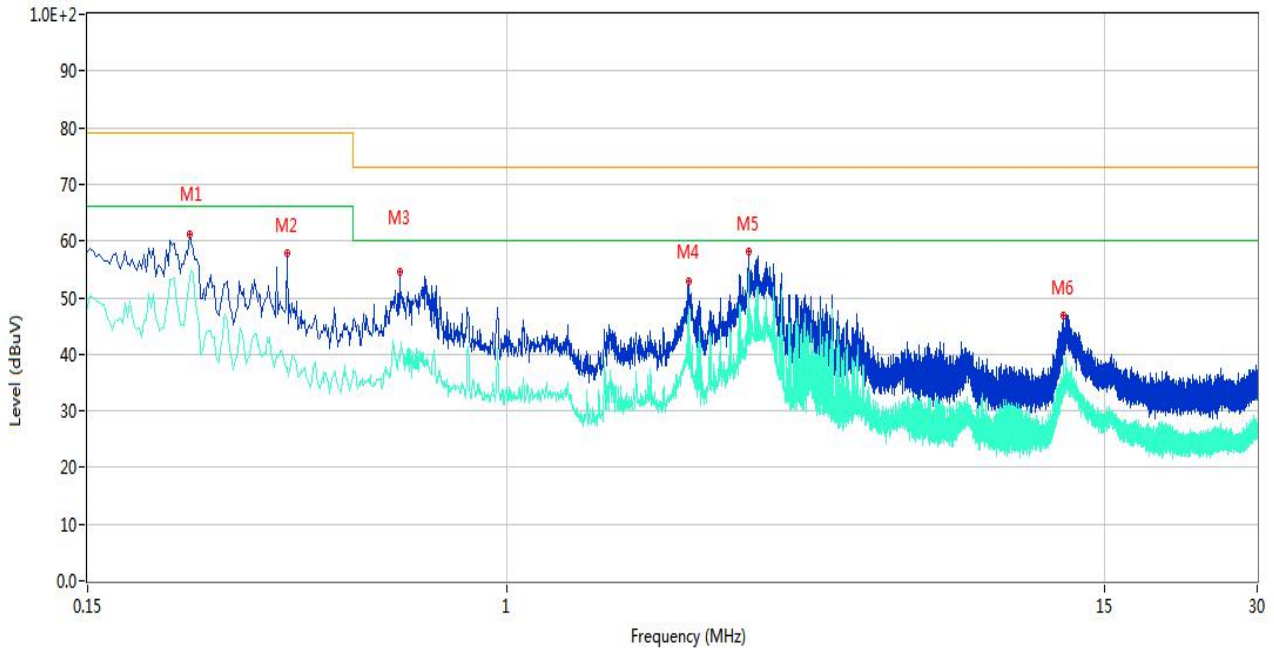
## A.2 Conducted Emission

AC Port

### Test Data and Plots

The worst test mode: The Grid-connected Test mode (Full Load)

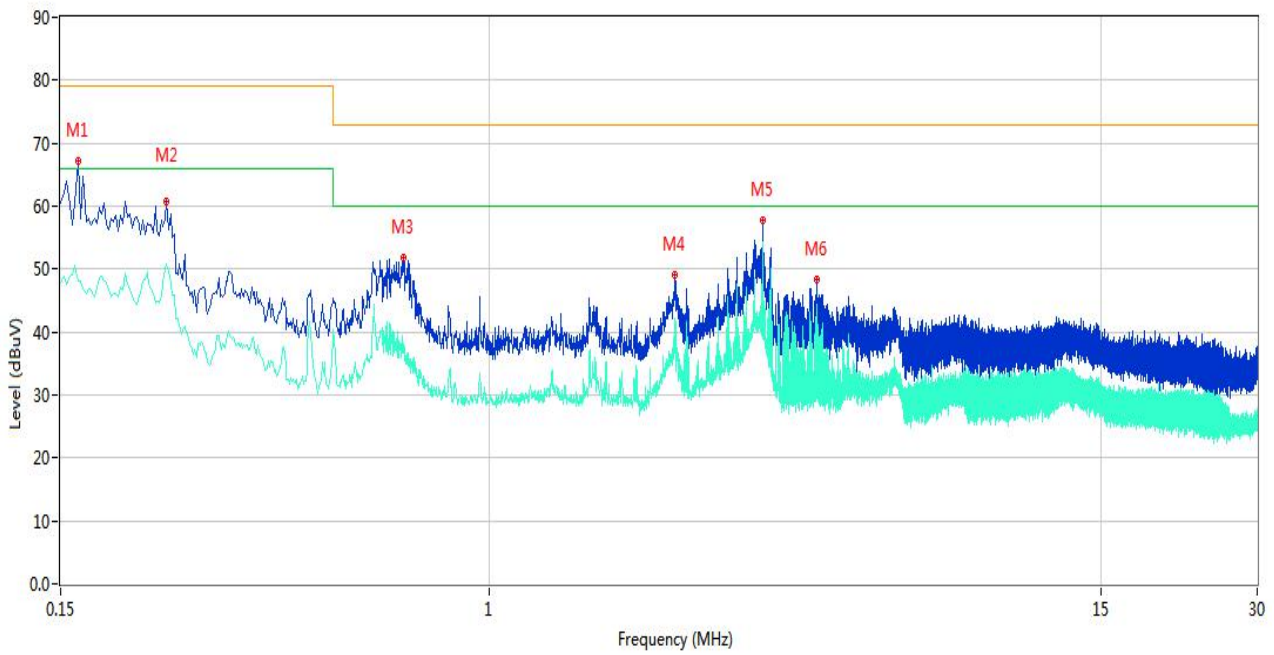
#### L1 Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.238	61.27	30.02	79.00	-17.73	Peak	L1	P
1**	0.238	53.57	30.02	66.00	-12.43	AV	L1	P
2	0.370	57.91	30.05	79.00	-21.09	Peak	L1	P
2**	0.370	37.86	30.05	66.00	-28.14	AV	L1	P
3	0.616	54.55	30.09	73.00	-18.45	Peak	L1	P
3**	0.616	38.92	30.09	60.00	-21.08	AV	L1	P
4	2.280	53.02	30.05	73.00	-19.98	Peak	L1	P
4**	2.280	48.42	30.05	60.00	-11.58	AV	L1	P
5	3.000	58.20	30.06	73.00	-14.80	Peak	L1	P
5**	3.000	54.41	30.06	60.00	-5.59	AV	L1	P
6	12.478	46.97	29.99	73.00	-26.03	Peak	L1	P
6**	12.478	38.93	29.99	60.00	-21.07	AV	L1	P

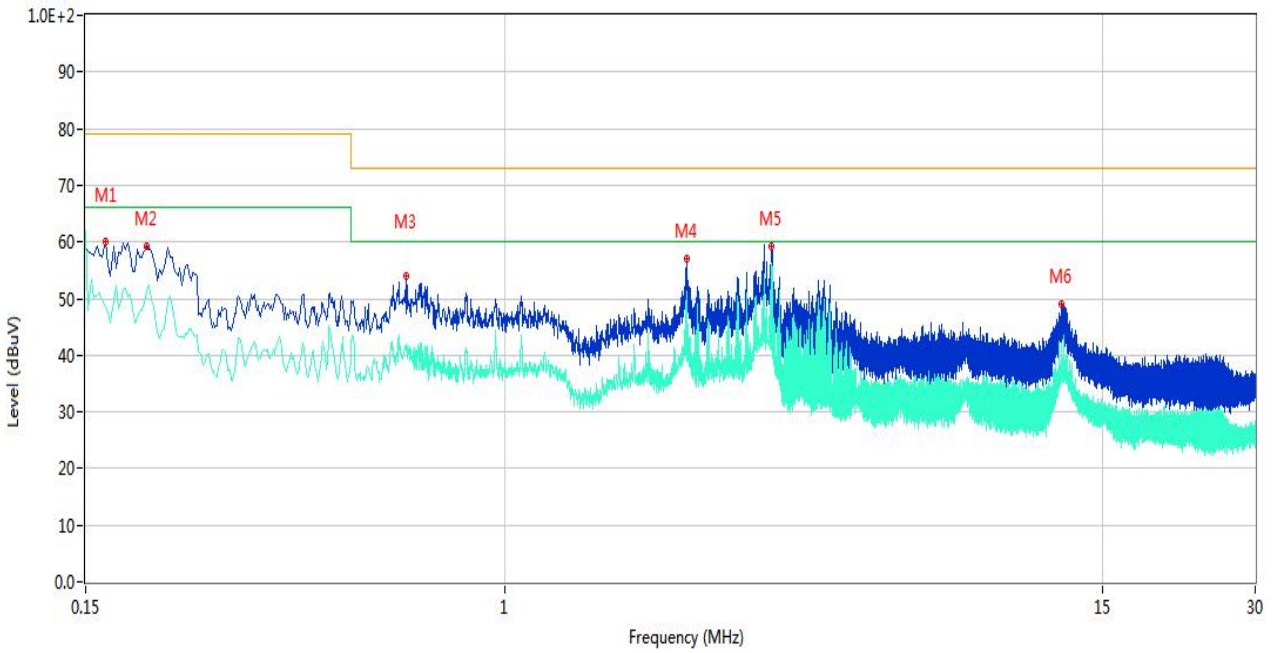


## L2 Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.156	60.22	30.07	79.00	-18.78	Peak	L2	P
1**	0.156	48.92	30.07	66.00	-17.08	AV	L2	P
2	0.240	60.66	30.01	79.00	-18.34	Peak	L2	P
2**	0.240	50.87	30.01	66.00	-15.13	AV	L2	P
3	0.686	51.73	30.02	73.00	-21.27	Peak	L2	P
3**	0.686	38.21	30.02	60.00	-21.79	AV	L2	P
4	2.278	49.14	30.05	73.00	-23.86	Peak	L2	P
4**	2.278	40.69	30.05	60.00	-19.31	AV	L2	P
5	3.358	57.84	30.09	73.00	-15.16	Peak	L2	P
5**	3.358	53.50	30.09	60.00	-6.50	AV	L2	P
6	4.262	48.43	30.04	73.00	-24.57	Peak	L2	P
6**	4.262	44.06	30.04	60.00	-15.94	AV	L2	P

L3 Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.164	59.94	29.88	79.00	-19.06	Peak	L3	P
1**	0.164	48.61	29.88	66.00	-17.39	AV	L3	P
2	0.198	59.25	29.96	79.00	-19.75	Peak	L3	P
2**	0.198	51.45	29.96	66.00	-14.55	AV	L3	P
3	0.640	53.92	30.01	73.00	-19.08	Peak	L3	P
3**	0.640	41.75	30.01	60.00	-18.25	AV	L3	P
4	2.280	56.98	30.05	73.00	-16.02	Peak	L3	P
4**	2.280	51.22	30.05	60.00	-8.78	AV	L3	P
5	3.360	59.16	30.09	73.00	-13.84	Peak	L3	P
5**	3.360	56.19	30.09	60.00	-3.81	AV	L3	P
6	12.460	49.05	30.00	73.00	-23.95	Peak	L3	P
6**	12.460	41.51	30.00	60.00	-18.49	AV	L3	P

### A.3 Electrostatic Discharge Immunity

Test Points	Discharge Level (kV)	Discharge Mode	Number of Discharge	Met Criteria	Required Criteria	Verdict
HCP	±2, 4kV	Connect discharge	100	A	B	P
VCP	±2, 4kV	Connect discharge	100	A	B	P
Metal screw	±2, 4kV	Connect discharge	160	A	B	P
Heat sink	±2, 4kV	Connect discharge	160	A	B	P
Display screen	±2, 4, 8kV	Air discharge	160	A	B	P
Button	±2, 4, 8kV	Air discharge	160	A	B	P

### A.4 Radio Frequency Electromagnetic Field Immunity

Antenna Polarity	Frequency (MHz)	Side	Field Strength (V/m)	Met Criteria	Required Criteria	Verdict
Vertical	80 - 1000	Front, Back, Left, Right	10	A	A	P
Horizontal	80 - 1000	Front, Back, Left, Right	10	A	A	P
Vertical	1400 - 6000	Front, Back, Left, Right	3	A	A	P
Horizontal	1400 - 6000	Front, Back, Left, Right	3	A	A	P

### A.5 Electrical Fast Transient/Burst Immunity

Test Port	Test Point	Polarity	Test Level (kV)	Met Criteria	Required Criteria	Verdict
AC Port	L1+L2+L3+PE	+ / -	0.5,1,2	A	B	P
DC Port	+&-	+ / -	0.5,1	A	B	P

### A.6 Surge Immunity

Times	5 times for positive and negative		Time interval		60s		
Test Port	Coupling Line	Polarity	Voltage (kV)	Test Waveform	Met Criteria	Required Criteria	Verdict
AC Port	L1-L2, L1-L3, L2-L3	+ / -	0.5,1	1.2/50us	A	B	P
AC Port	L1-PE, L2-PE, L3-PE	+ / -	0.5,1,2	1.2/50us	B	B	P
DC Port	+ & -	+ / -	0.5	1.2/50us	A	B	P

### A.7 Immunity to Conducted Disturbances Induced by RF Fields

Test Port	Frequency (MHz)	Test Voltage (V)	Met Criteria	Required Criteria	Verdict
AC Port	0.15 - 80	10	A	A	P
DC Port	0.15 - 80	10	A	A	P

## A.8 Power Frequency Magnetic Fields Immunity

Test direction	Test level(A/m)	Met Criteria	Required Criteria	Verdict
X	30	A	A	P
Y	30	A	A	P
Z	30	A	A	P

## A.9 Voltage Dips and Short Interruptions Immunity

Test Mode	Residual voltage (%)	Duration (ms)	Times	Interval (sec)	Met Criteria	Required Criteria	Verdict
Voltage Dips	0	20	3	10	A	B	P
Voltage Dips	40	200	3	10	A	C	P
Voltage Dips	70	500	3	10	A	C	P
Voltage Interruptions	0	5000	3	10	B	C	P

## ANNEX B TEST SETUP PHOTOS

Note: TEST SETUP PHOTOS please refer to original test report No.BL-DG2070052-402(G2) issued by Shenzhen BALUN Technology Co., Ltd. On Dec. 09, 2020 section **ANNEX B TEST SETUP PHOTOS**.

# ANNEX C EUT EXTERNAL PHOTOS

Top



Left



Bottom (E-75KTL, E-80KTL)



Bottom (E-100KTL, E-110KTL, E-100KTL-HV, E-125KTL-HV)





Bottom (E-136KTL-HV)



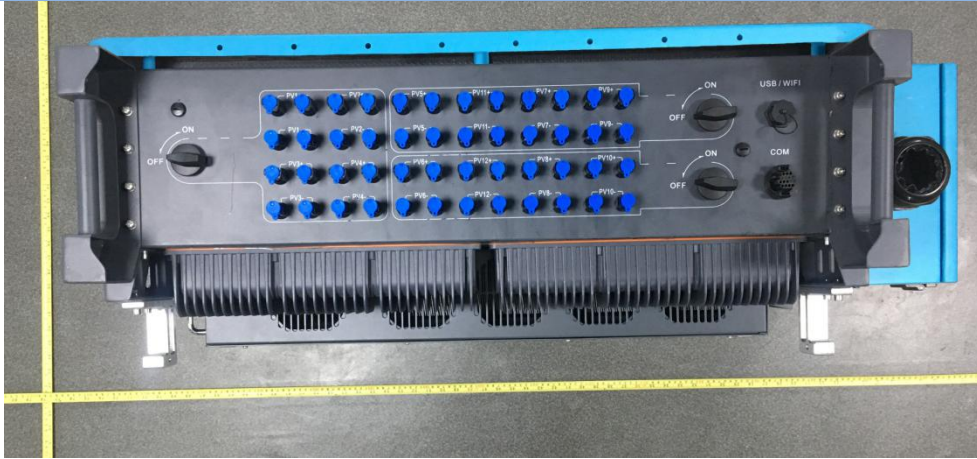
DC connection interface (E-75KTL, E-80KTL)



DC connection interface (E-100KTL, E-110KTL, E-100KTL-HV, E-125KTL-HV)



DC connection interface (E-136KTL-HV)

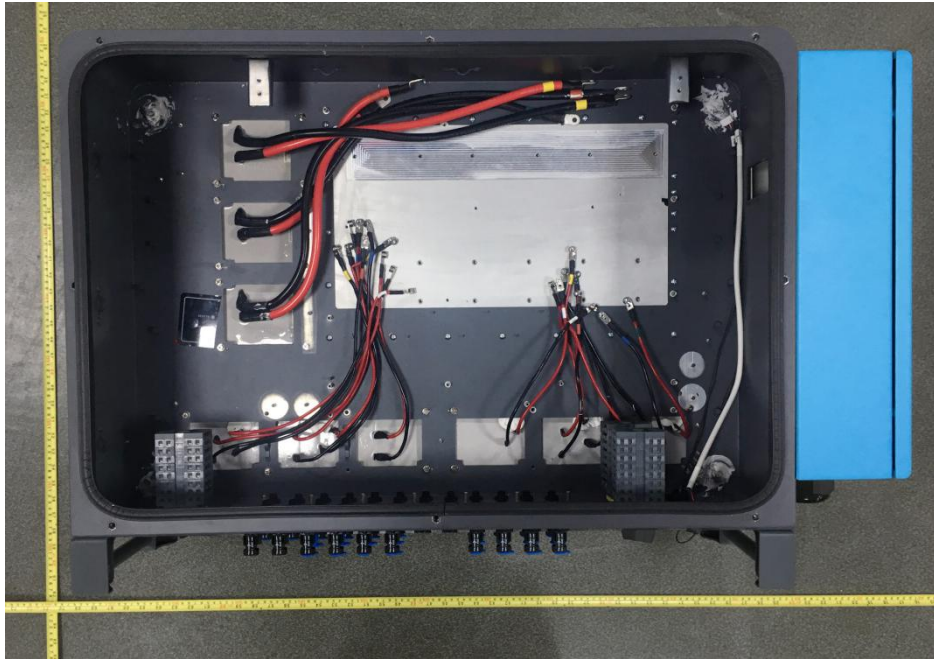


## ANNEX D EUT INTERNAL PHOTOS

Bottom of the machine

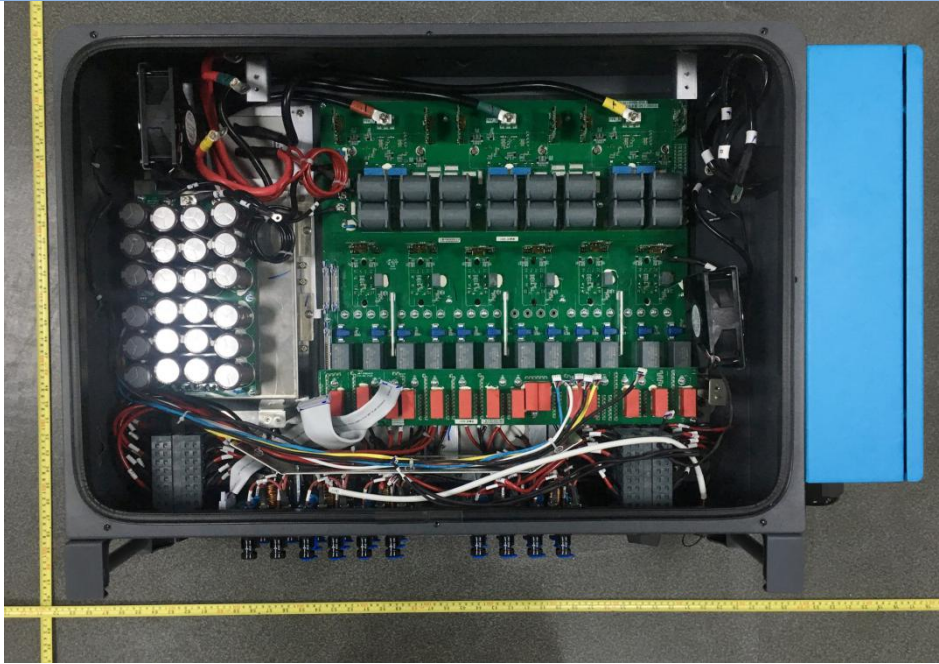


Case





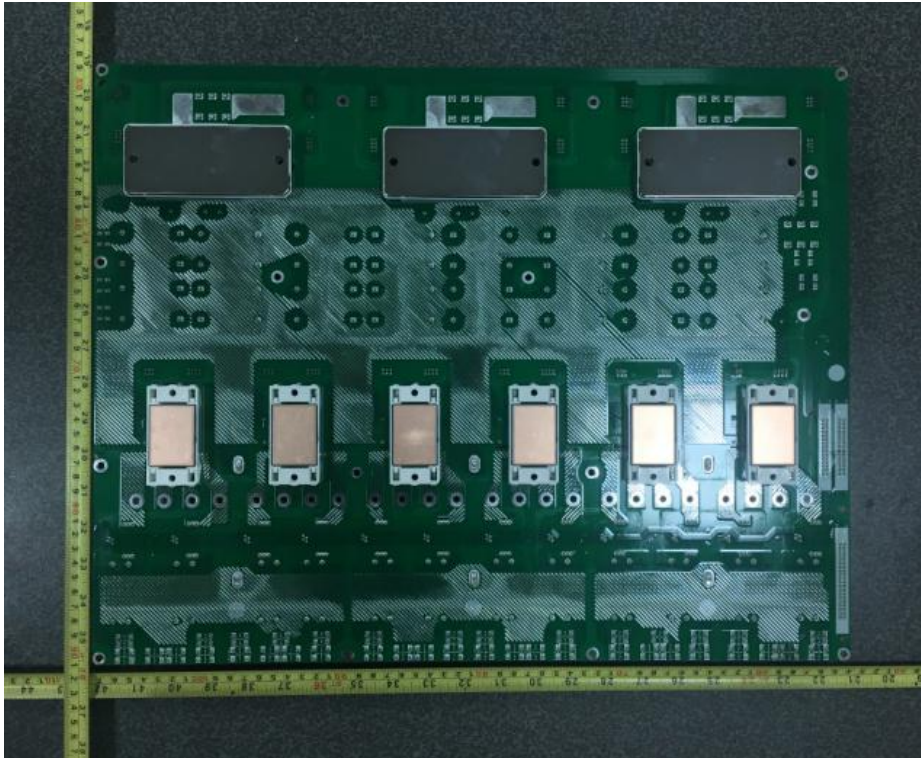
Upper part of the machine



The front of power board



The back of power board



The front of output board





The back of output board



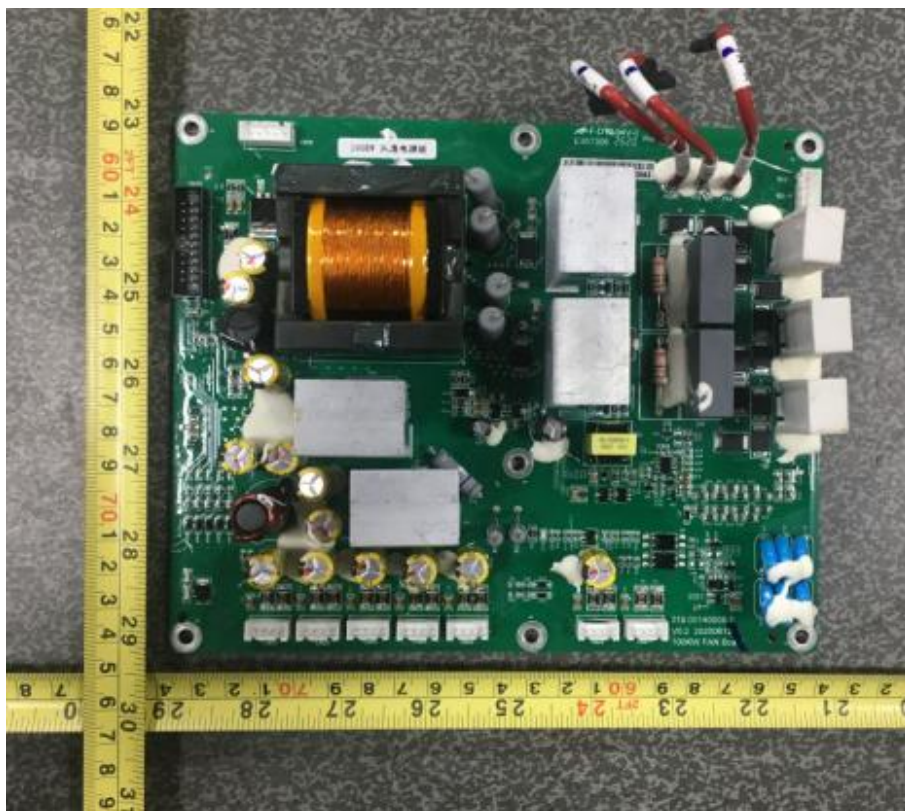
The front of power board



The back of power board



The front of power circuit board





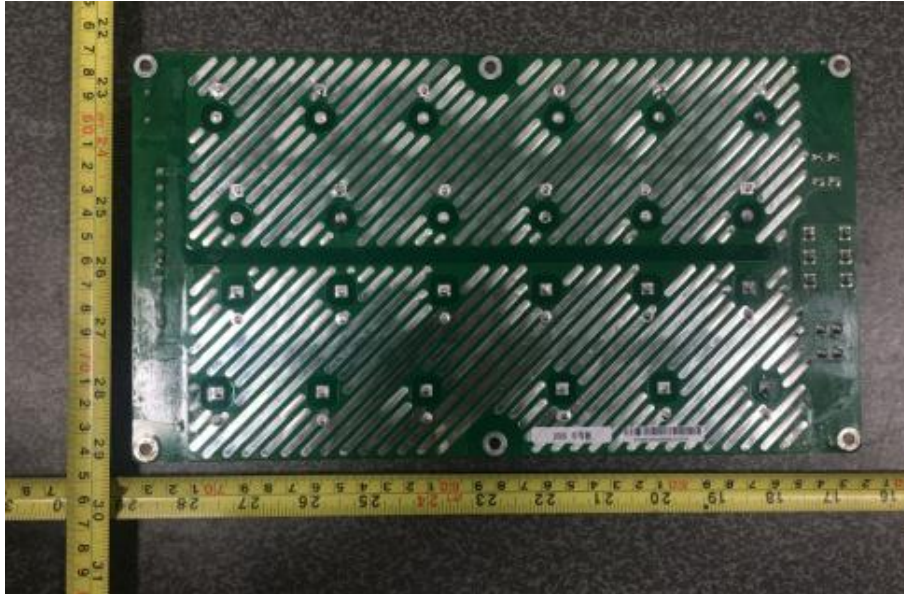
The back of power circuit board



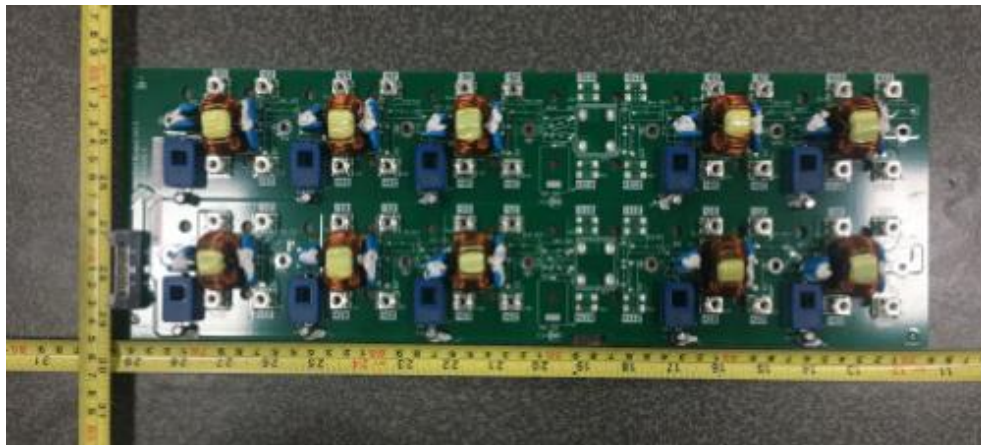
The front of BUS capacitor board



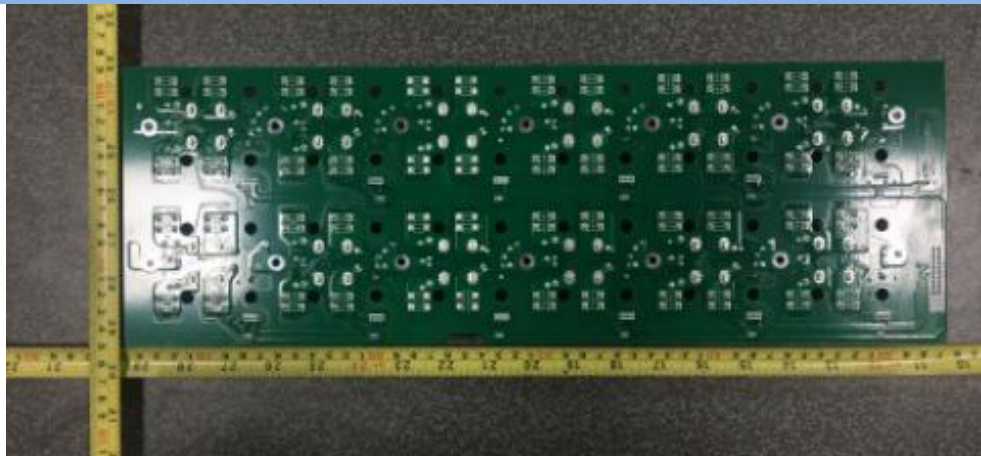
The back of BUS capacitor board



The front of EMI input filter board

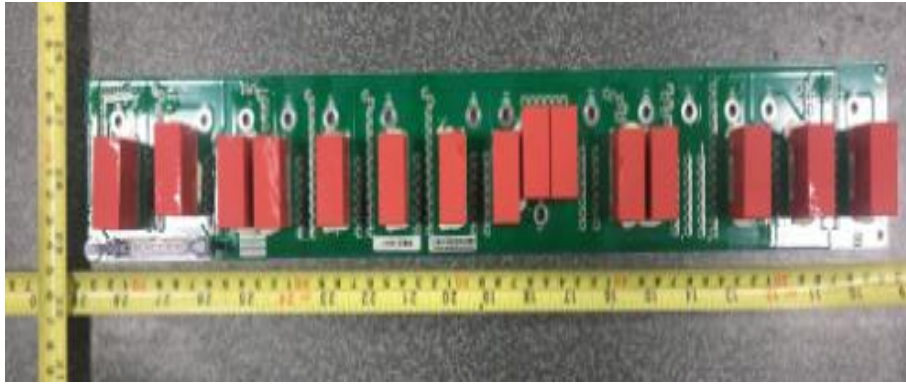


The back of EMI input filter board





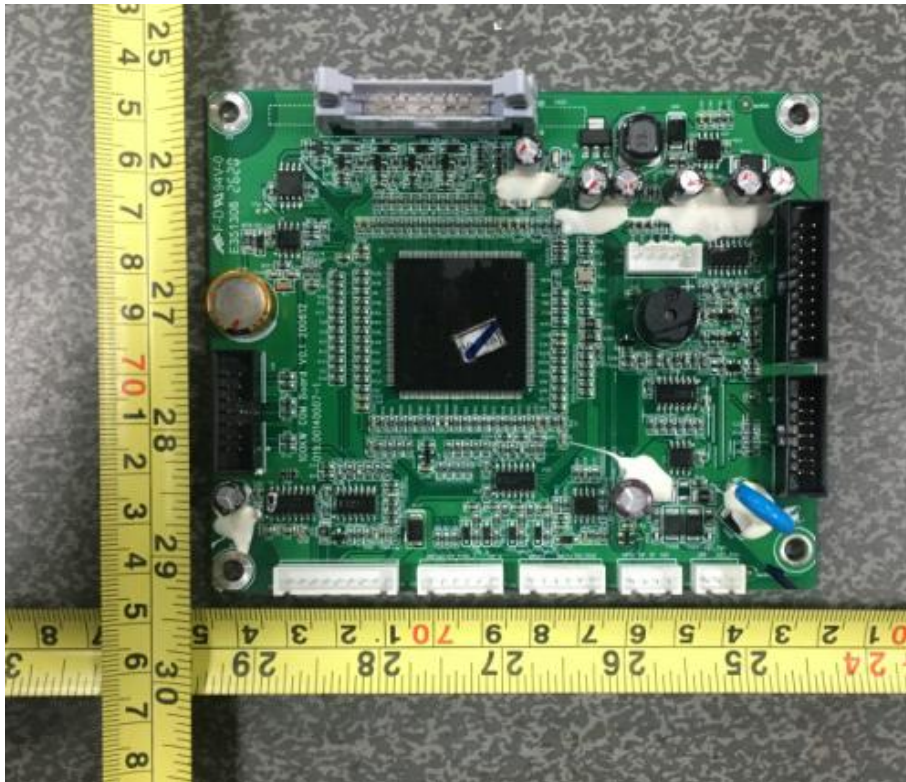
The front of lightning protection board



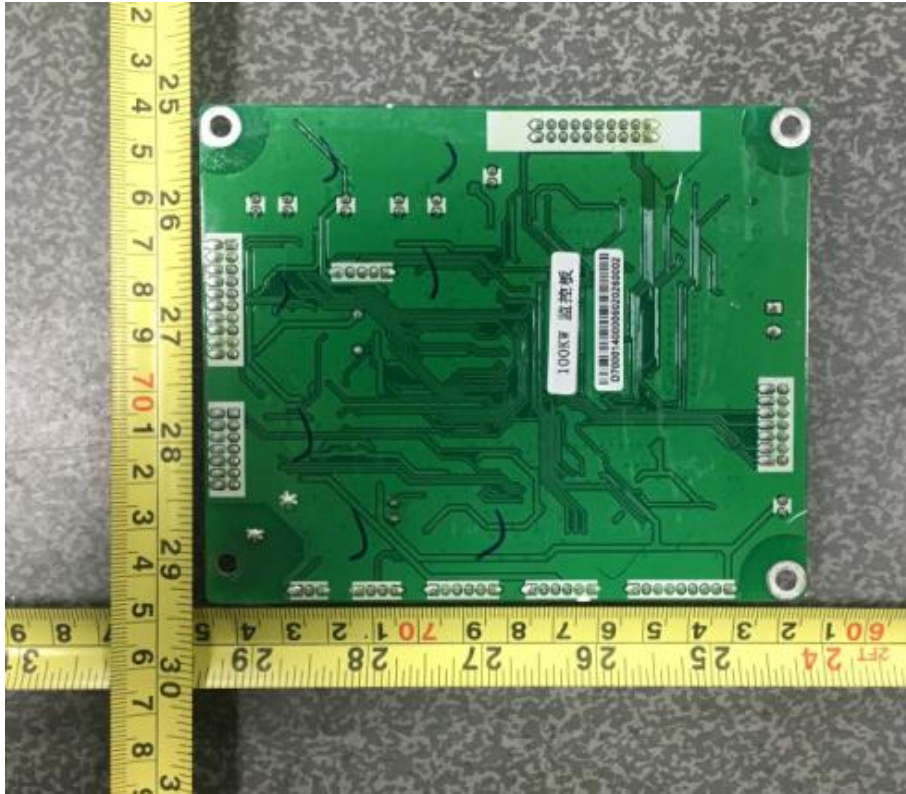
The back of lightning protection board



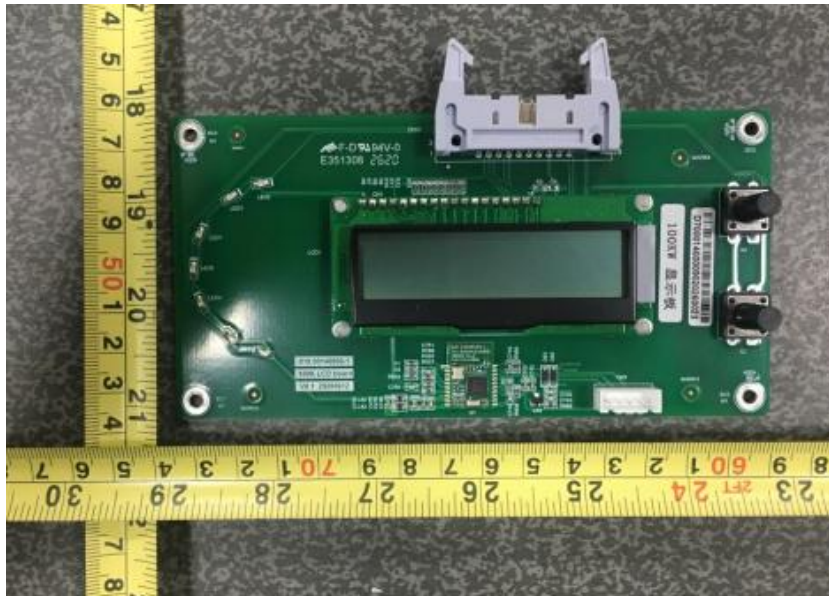
The front of communication board



The back of communication board

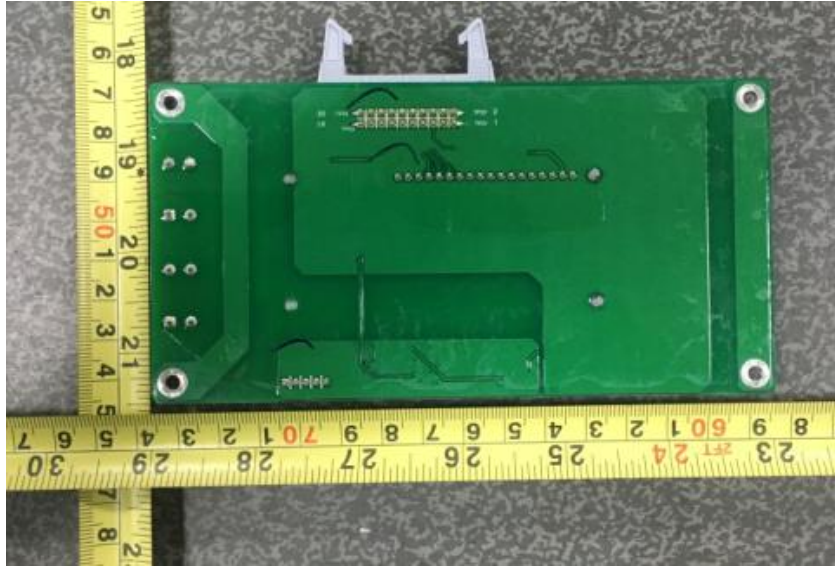


The front of display screen

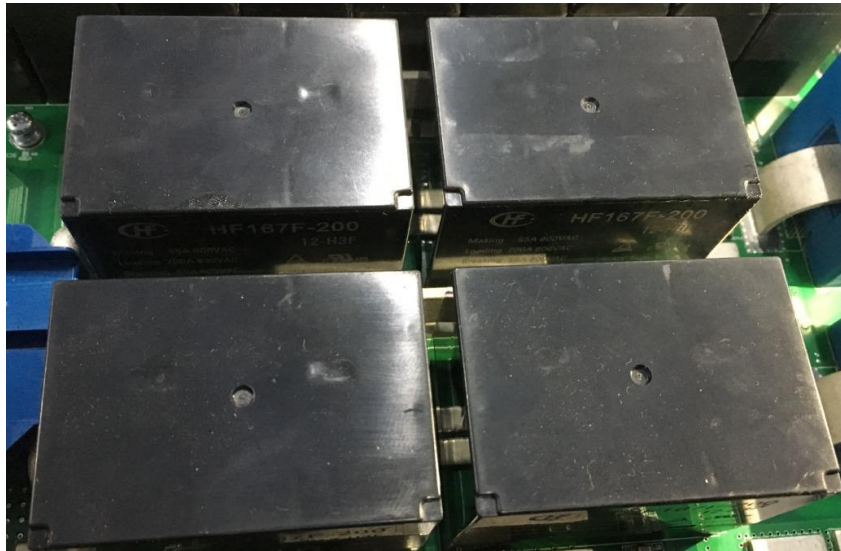




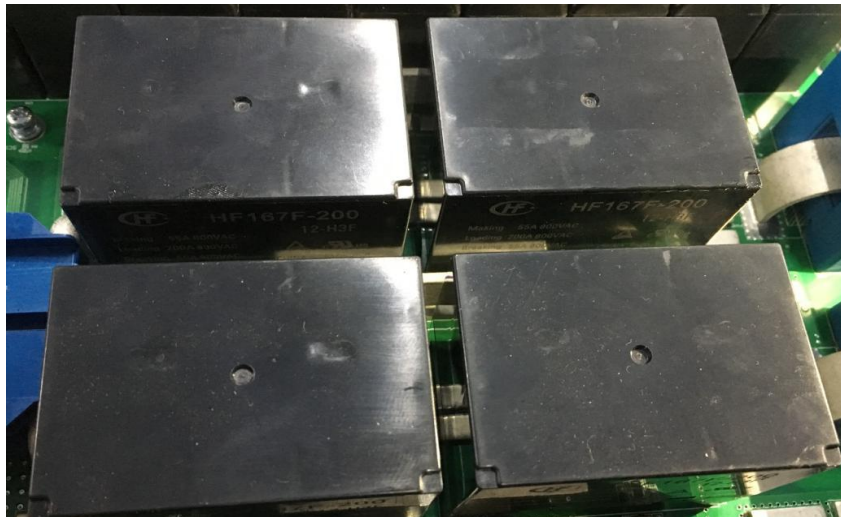
The back of display screen



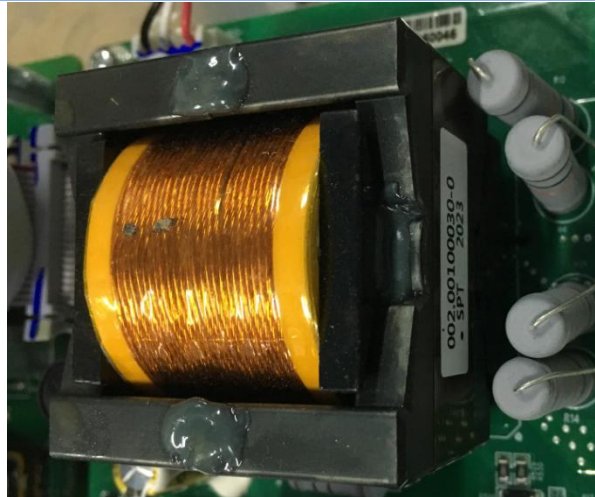
Output relay



Insulation resistance detection relay



Transformer



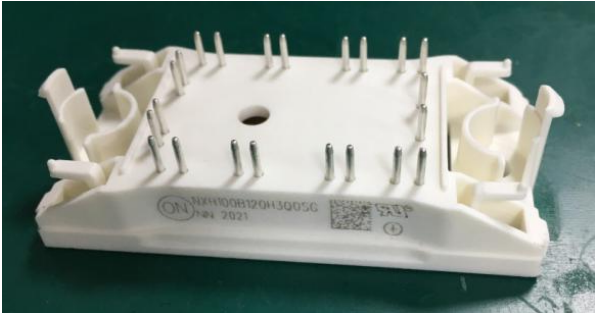
Leakage current sensor



X capacitance



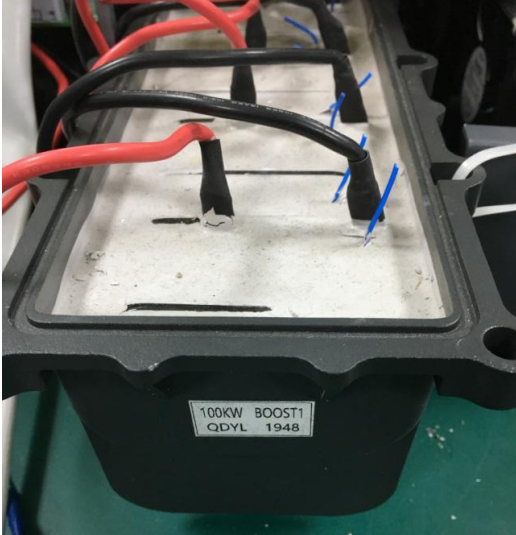
IGBT



INV inductance

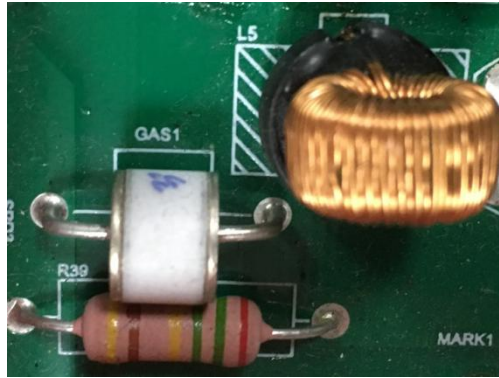


Boost inductance

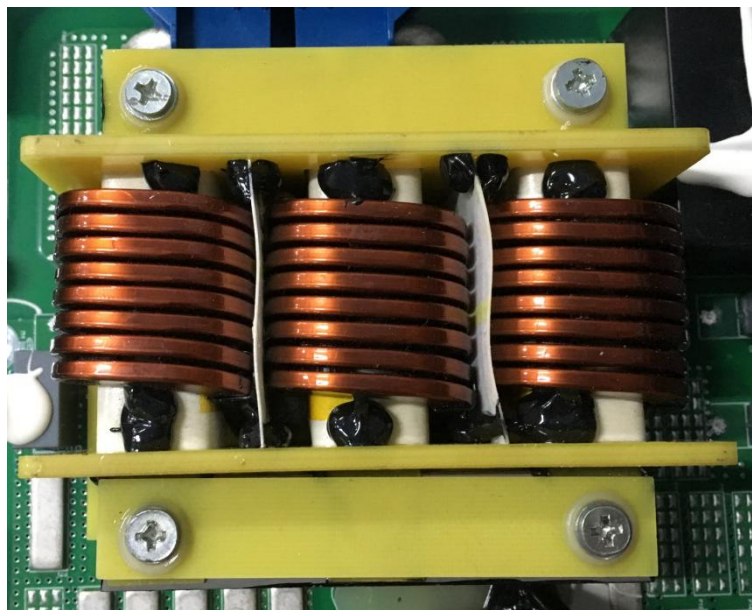




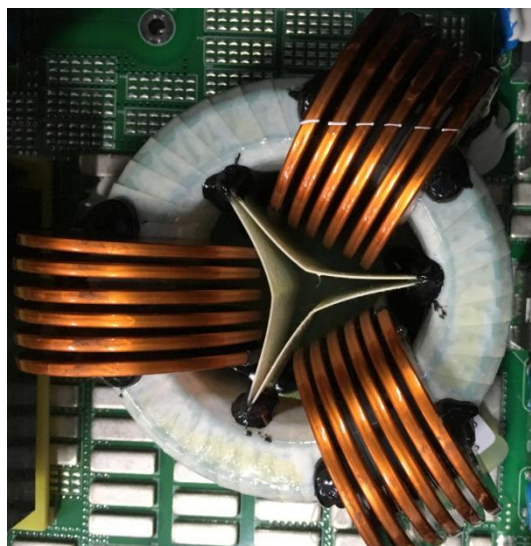
Gas discharge tube



Differential mode inductor

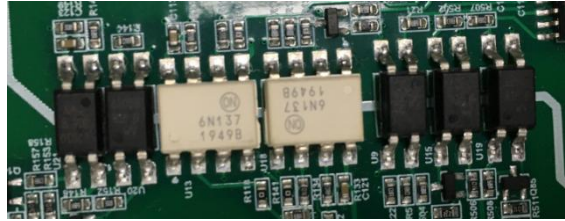


Common mode inductance





Optocoupler



AC current sensor



Y capacitance



Serial Number



Soft Version: ARM



Soft Version: DSPS



Soft Version: DSPM



--END OF REPORT--